

IN THE CLAIMS:

Amendments to the Claims

Please amend claims 1 and 5-11 and add the new claims as shown below.

Listing of Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (currently amended) A mass spectrometer comprising:
an ion source generating sample ions;
an ion trap having a pair of endcap electrodes and a ring electrode and
accumulating and ejecting said ions generated by said ion source and isolating
precursor ions from the accumulated ions and dissociating the isolated precursor ions
and ejecting the dissociated ions from said ion trap;
a gas introduction hole arranged in said ring electrode or said endcap electrode
for introducing an intermittently-introduced bath gas into said ion trap ~~at a~~
~~predetermined timing~~; and
a detector detecting the ions ejected from said ion trap,
wherein the center axis of said gas introduction hole is arranged so as to pass
through the center of said ion trap.
2. (original) The mass spectrometer according to claim 1, wherein said gas introduction hole is arranged in said ring electrode.
3. (original) The mass spectrometer according to claim 1, wherein said gas introduction hole is arranged in at least one of said endcap electrodes.

4. (original) The mass spectrometer according to claim 1, wherein said intermittently-introduced bath gas is introduced into said ion trap via a pulsed valve using a solenoid.

5. (currently amended) The mass spectrometer according to claim 1, further comprising a unit for controlling an application timing of an RF voltage applied to said ring electrode and an introduction timing of said intermittently-introduced bath gas frominto said ion trap through said gas introduction hole.

6. (currently amended) The mass spectrometer according to claim 1, wherein the distance from the front edge of said gas introduction hole to the center of the said ion trap is below 16mm.

7. (currently amended) A mass spectrometric method comprising the steps of:

generating sample ions by an ion source;

allowing said ions to be incident and accumulated into an ion trap having a pair of endcap electrodes and a ring electrode;

selectively holding precursor ions having a desired mass in said ion trap;

introducing dissociating said precursor ions, wherein an intermittently–introduced bath gas fromis introduced through a gas introduction hole arranged in said ring electrode having a center axis arranged so as to pass through the center of said ion trap into said ion trap to dissociate said precursor ions;

ejecting fragment the dissociated ions from said ion trap; and

detecting the ejected ions.

8. (currently amended) The mass spectrometric method according to claim 7, further comprising a step of controlling an application timing of an RF voltage

applied to said ring electrode and an introduction timing of said intermittently-introduced bath gas ~~from~~into said ion trap ~~through~~ said gas introduction hole.

9. (currently amended) A mass spectrometric method comprising the steps of:

generating sample ions by an ion source;

allowing said ions to be incident and accumulated into an ion trap having a first endcap electrode having an incidence hole into which said ions are incident, a second endcap electrode having an ejection hole from which said ions are ejected, and a ring electrode;

selectively holding precursor ions having a desired mass in said ion trap;

introducing ~~dissociating~~ said precursor ions, wherein an intermittently-introduced bath gas ~~from~~is introduced through a gas introduction hole arranged in said ring electrode having a center axis passing through the center of said ion trap to be almost orthogonal to an axis connecting the center axis of said incidence hole and the center axis of said ejection hole into said ion trap to dissociate said precursor ions;

ejecting ~~fragment~~the dissociated ions from said ion trap; and

detecting the ejected ions.

10. (currently amended) A mass spectrometric method comprising the steps of:

generating sample ions by an ion source;

allowing said ions to be incident and accumulated into an ion trap having a first endcap electrode having an incidence hole into which said ions are incident, a second endcap electrode having an ejection hole from which said ions are ejected, and a ring electrode;

selectively holding precursor ions having a desired mass in said ion trap;

jetting ~~dissociating~~ said precursor ions, wherein an intermittently-introduced

bath gas ~~from~~is introduced through a gas introduction hole arranged in said ring electrode having a center axis almost orthogonal to an axis connecting the center axis of said incidence hole and the center axis of said ejection hole so as to reach the center part of said ion trap for dissociating said precursor ions;
ejecting ~~fragment~~the dissociated ions from said ion trap; and
detecting the ejected ions.

11. (currently amended) A mass spectrometric method comprising the steps of:

generating sample ions by an ion source;
allowing said ions to be incident and accumulated into an ion trap having a first endcap electrode having an incidence hole into which said ions are incident, a second endcap electrode having an ejection hole from which said ions are ejected, and a ring electrode;
selectively holding precursor ions having a desired mass in said ion trap;
~~jetting~~dissociating said precursor ions, wherein an intermittently-introduced bath gas ~~from~~is introduced through a gas introduction hole arranged in said ring electrode having a center axis arranged so as to pass through a region including the center of said ion trap into said ion trap to dissociate said precursor ions;
ejecting ~~fragment~~the dissociated ions from said ion trap; and
detecting the ejected ions.

12. (new) The mass spectrometer according to claim 12, wherein said intermittently-introduced bath gas is introduced from said gas introduction hole into said ion trap one of (a) during the accumulating of ions generated by said ion source and the isolating of precursor ions from the accumulated ions, and (b) during the dissociating of the isolated precursor ions.

13. (new) The mass spectrometer according to claim 12, wherein said intermittently-introduced bath gas is introduced (a) during the accumulating of ions generated by said ion source and the isolating of precursor ions from the accumulated ions without being introduced (b) during the dissociating of the isolated precursor ions.

14. (new) The mass spectrometer according to claim 12, wherein said intermittently-introduced bath gas is introduced (b) during the dissociating of the isolated precursor ions without being introduced (a) during the accumulating of ions generated by said ion source and the isolating of precursor ions from the accumulated ions.

15. (new) A mass spectrometer method comprising the steps of:
generating sample ions by an ion source;
accumulating ions generated by said ion source in an ion trap having a pair of endcap electrodes and a ring electrode;
isolating precursor ions having a desired mass from the accumulated ions in said ion trap;
dissociating the precursor ions;
ejecting the dissociated ions from said ion trap; and
detecting the ejected ions;
wherein, in the step of accumulating the ions and in the step of isolating the precursor ions, an intermittently-introduced bath gas is introduced through a gas introduction hole arranged in said ring-electrode having a center axis arranged so as to pass through the center of said ion trap into said ion trap; and
wherein, in the step of dissociating of the precursor ions, a laser beam irradiates the isolated precursor ions in the region near the center of the ion trap.